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RD232(RS232 Output/485 Output/TTL Output)

902MHz~928MHz Wireless Modem 50mW

RS232 Interface

RS485

TTL Interface

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Version History

Version	Date	Changes
V0.01	Aug.05,2009	1st. Edition
V0.02	Aug.26,2009	2nd. Edition
V0.03	Oct.22,2009	3rd. Edition
V0.04	Jan.05,2010	4th. Edition
V0.04	Mar.30,2010	4th. Edition, Revised picture

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Important Event

- This product is in general use for the equipment on the premise of the development, design, manufacture. Do not use that require high security purposes, such as machinery or medical, aviation equipment, machinery and transport-related deaths are directly or indirectly related to the system.
- This product should be in this brochure by the instructions of the types and rated voltage power under the current proper use. If violation of this statement by the safety records of the supply operation, I am afraid our company cannot afford any of the responsibility.
- Do not self-decomposition, alteration, repair of the products also will cause fire, electric shock, fault, and dangerous. In addition, their decomposition, alteration, repair the product, failure is not within the scope of warranty.
- The products are not waterproof, so please do not use and touch water. Take off and on also please note. Rain, spray, drinks, steam, sweat may be a failure.
- Use of this product, please be sure to use according to the statement recorded by the use of methods to operate. Please do not violate particular attention to the matter reminded to use.
- Please respect this statement recorded by the note. When consumers in contravention of this statement recorded note of the operation, I am afraid our company could not shoulder any responsibility.
- Products are defective, the Company will be responsible for free to amend the flaws, or to the same flawless product or its equivalent products in exchange. However, the Company does not assume based on the requirements of the flaw and loss responsibility.
- The Company reserves the right to retain without notice to users of the cases, the product of hardware / software (version upgrade) is with the right to edit.

Declaration

This product provides different frequency for user selection to meet different telecommunication regulation and FCC/CE on different countries.

Warranty

The warranty time is within one year from purchased date. The warranty scope are used in normal situation and none vandalism. (Some function harmful out of warranty scope and Vandalism are Un-warranty).

Un-warranty Scope Description

- Because the natural disaster, accident or human factor to cause the bad damage.
- Violate the product instruction manual to cause the damage of the products.
- The improper assemble causes damage.
- The products used the unsanctioned accessory to cause damaged.
- Overstep the allowed used environment to cause the products damaged.

Contact Us

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Key Feature

- UHF Band Wireless Data Transceiver
- Exclusive Hopping Technology
- RF Output Power up to 50mW
- Sensitivity up to -118dBm
- RS232,RS485,TTL Interface
- Transceiver Data Rate 1.6Kbps~128Kbps

Application

- Wireless Network
- Multi-Channel Home Automation Standard
- Wireless RS232
- Active RFID Base Station Transceiver

Characteristic

Parameter	Min	Type	Max	Unit	Condition
Operating Condition					
Operating Temperature Range	-10		+70	℃	
Operating Supply Voltage	4.5	5	9	V	
Current Consumption					
RX Mode (TTL 3V)		34	35	mA	
TX Mode (TTL 3V)		80		mA	Peak
RX Mode (RS485)		34	35	mA	
TX Mode (RS485)		80		mA	Peak
RX Mode (RS232)		34	35	mA	
TX Mode (RS232)		80		mA	Peak
RF Characteristic					
Frequency Range	902		928	MHz	
Data Rate	1.6		128	Kbps	GFSK
TX Output Power		16	17	dBm	
RX Sensitivity			-118	dBm	
Modulation		GFSK			
Other					
ESD			2000	V	

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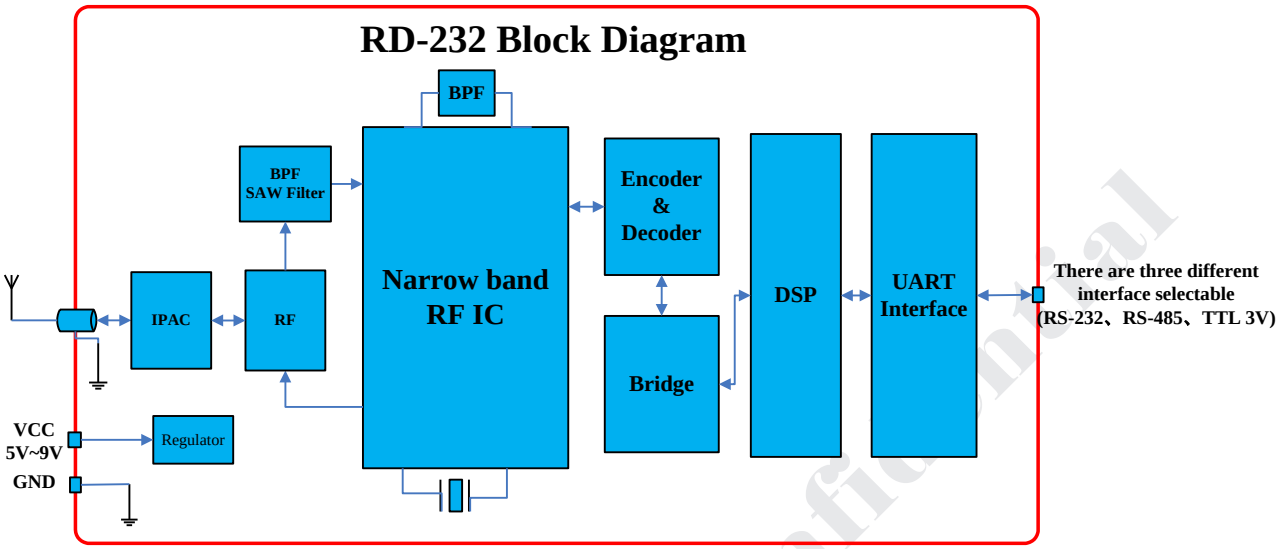
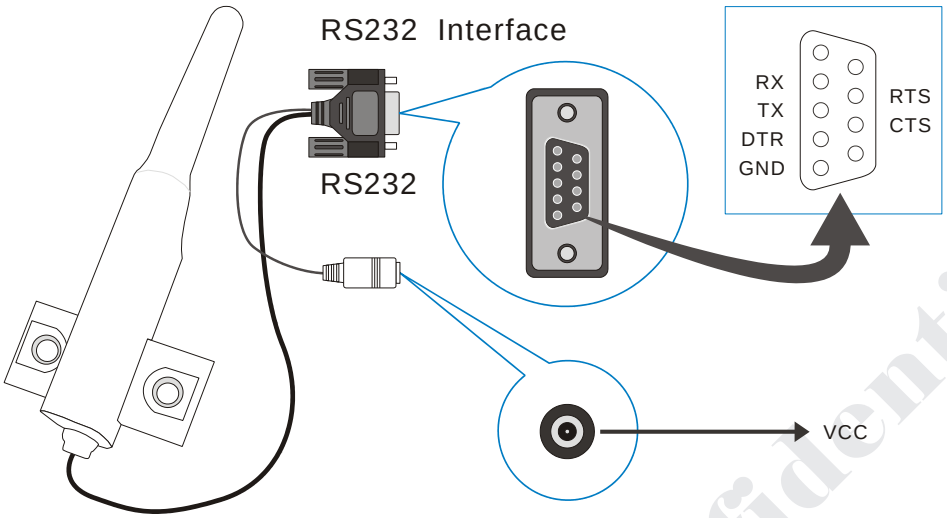
Interface Data Rate	1.2		115.2	Kbps	

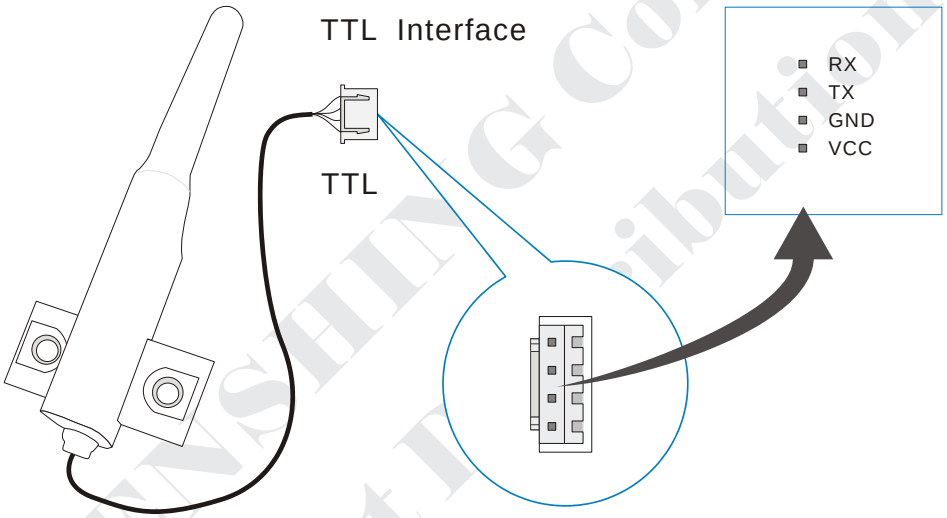
Block Diagram

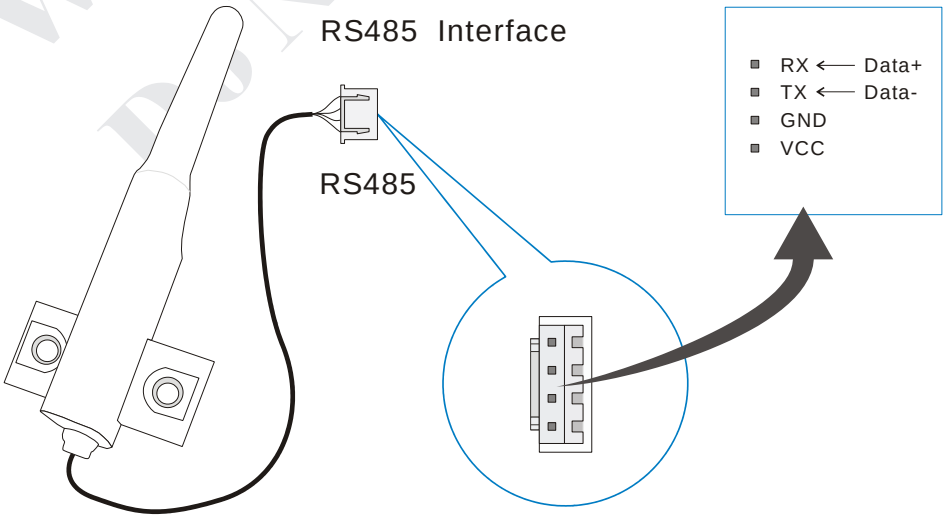


View

Pin Assignment







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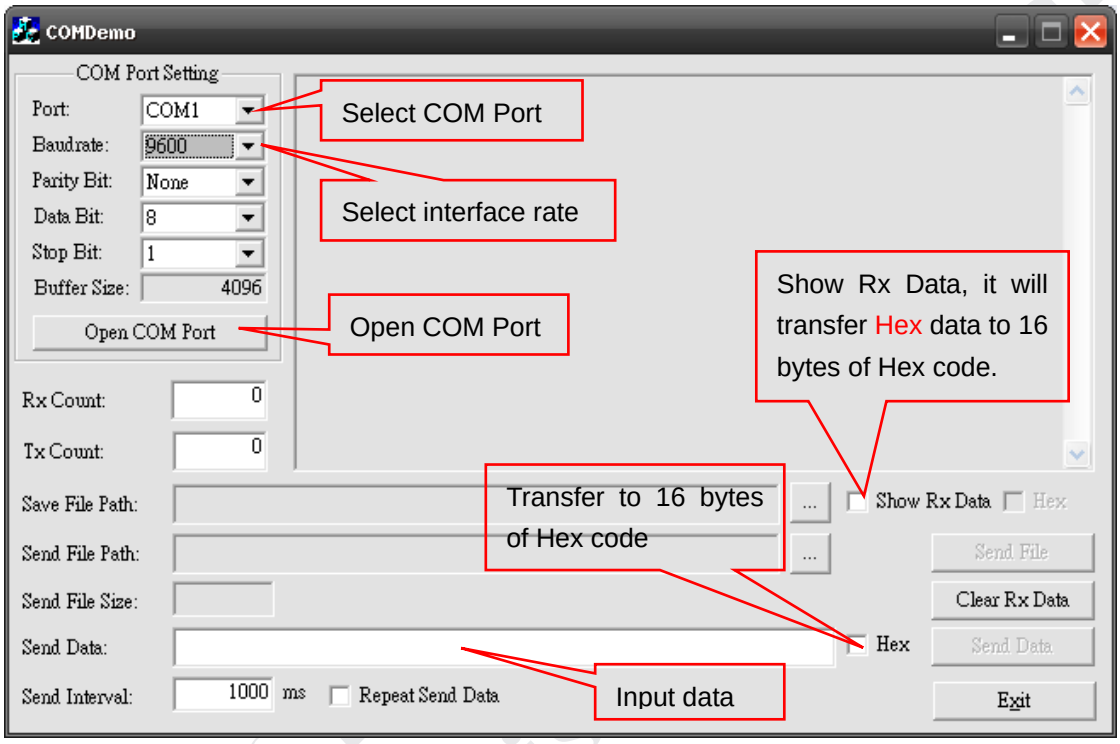
Command Summary

COMMAND	Send Value	Back Value	Remark
0x80 (Product info)	0x80	RD232-V106	Please find for firmware version from our website released.
0x81 (Set RF transmission rate)	0x81+1 byte (0x00~07)	Correct setting will return send value; incorrect setting will have no back value.	1 byte setting, default value is 0x03.
0x83 (Set ID)	0x83+1 byte (0x00~FF)	Correct setting will return send value; incorrect setting will have no back value.	1 byte setting, default value is 0x00.
0x85 (Set RD232 rate)	0x85+1 byte (0x00~07)	Correct setting will return send value; incorrect setting will have no back value.	1 byte setting, default value is 0x07=115200bps.
0x86 (Set link mode)	0x86+1 byte (0x00 or 0x01)	Correct setting will return send value; incorrect setting will have no back value.	1 byte setting, default value is 0x01=RD232 Modem.
0x87 (Set group ID)	0x87+2 bytes (0x0000~FFFF)	Correct setting will return send value; incorrect setting will have no back value.	2 bytes setting, default value is 0x0000.
0x01～0x7F (Entry into setting mode)	0x01～0x7F Total are 127 bytes (0x01～0x7F)	Correct setting will return send value; incorrect setting will have no back value.	Send 0x01～0x7Fand total are 127 bytes, if it received return value, it is meaning it already entry into setting mode.
0x8C (Set transfer station)	0x8C+1～11 bytes (0x00～FF)	Correct setting will return send value; incorrect setting will have no back value.	Min: 1 byte, Max: 10 bytes.
0x8C (Cancel transfer station)	0x8C (Only 0x8C)	Correct setting will return send value; incorrect setting will have no back value.	Cancel transfer station mode.

- Please use COM Demo program which WENSHING opened to send Hex code which format command is 16 bytes(Default interface rate is 115200 bps) through RD232(RS232 Output/485 Output/TTL Output) and amend to RD232(RS232 Output/485 Output/TTL Output). When user amended success, RD232(RS232 Output/485 Output/TTL Output) will automatically reply parameters for user's confirmation. After successful setting, user can begin to use.



- **Point-to-Point Transmission**

This mode can be used in multi-point transmission. You can specify receive side ID when you send data. It can receive data when GID and UID of your equipment can meet using conditions and under effective signal cover range. If you want to specify transmission path (maximum is 10 transfer stations), please add Address and receive side ID before every information, but the data which you send every time must be less than 120 bytes (it must include Address and ID of receive side). If you set preset transfer station, you can't use point-to-point transmission; you need to cancel transfer station so that you can use point-to-point transmission.

Address	ID Byte
0x71～7B	1～11
0x71=1 send 1 receive；0x72=1 send 1 transfer 1 receive；0x73=1 send 2 transfer and 1 receive	Path order

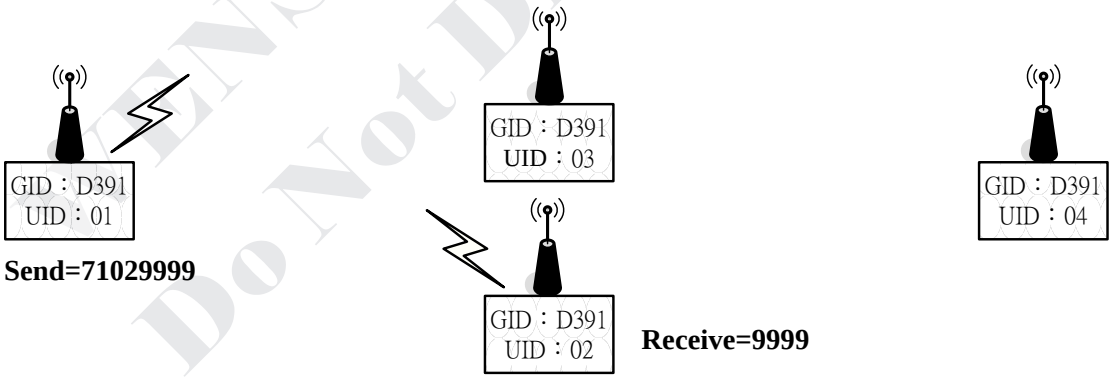
Preset set process of Point-to-Point Transmission mode

When you use point-to-point transmission mode, please set corresponding parameters so that it can start to work. Please set according to following steps.
Entry into setting mode →Set RF transmission rate→Set equipment UID→ Set RD232(RS232 Output/485 Output/TTL Output)interface rate →Set group ID→Exit setting mode→ Finish setting

1. Entry into setting mode: before revised corresponding parameters, you have to entry into setting mode just can change every setting.
2. Set RF transmission rate: suggest you collocate with interface rate to set when you start to set. Usually, RF transmission rate must be bigger than interface rate to avoid error data.
3. Set equipment ID: UID is for identity between equipments. User can specify point-to-point path through point-to-point transmission.
4. Set RD232(RS232 Output/485 Output/TTL Output) interface rate: you can collocate with equipment rate.
5. Set group ID: GID is for working group identify. When GID are different, equipments can ‘t send data or receive data each other.
6. Exit setting mode: after revised every parameters, you have to exit setting mode and save parameters.

Example

- If you want to send data 9999 from equipment which UID=01 to equipment which UID=02, data format which you send is 0x71029999.



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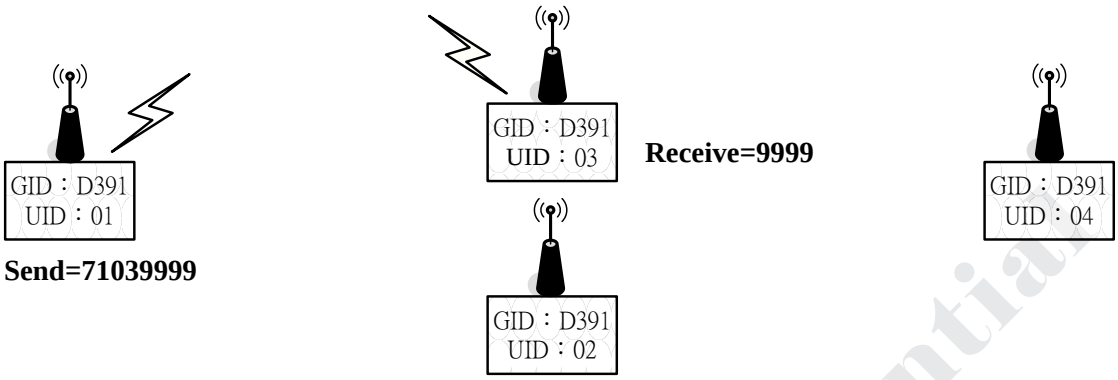
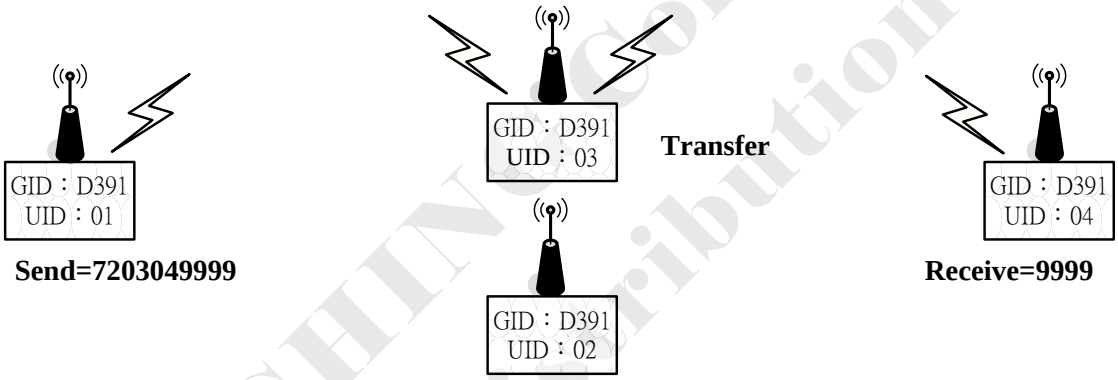
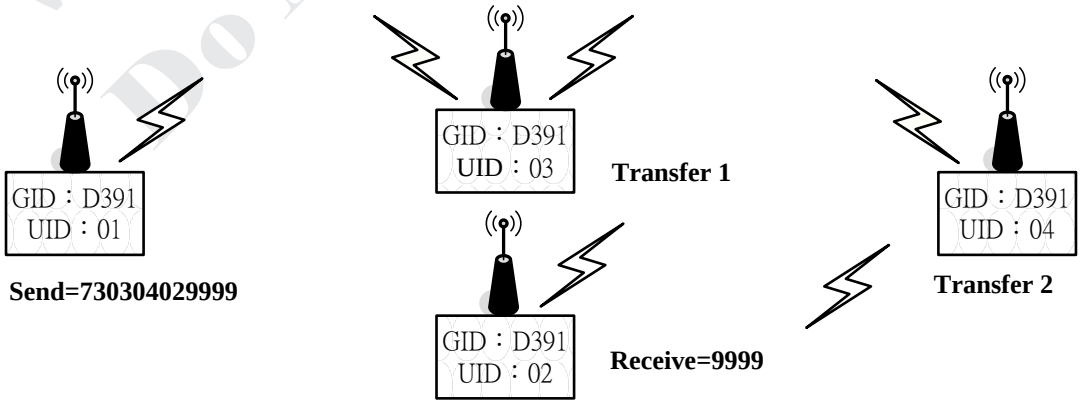
- If you want to send data 9999 from equipment which UID=01 to equipment which UID=03, data format which you send is 0x71039999.



- If you want to send data 9999 from equipment which UID=01 through equipment which UID=03 to transfer to equipment which UID=04, data format which you send is 0x7203049999.



- If you want to send data 9999 from equipment which UID=01 through equipment which UID=03 to transfer to equipment which UID=04 and transfer again to equipment which UID=02, data format which you send is 0x730304029999.



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Command Description

Entry into setting mode

Sent 0x01+0x02+～+7E+0x7F, total are 127 bytes. If RD232 entry into setting mode, it will return send value to remind user can start to revise every parameter.

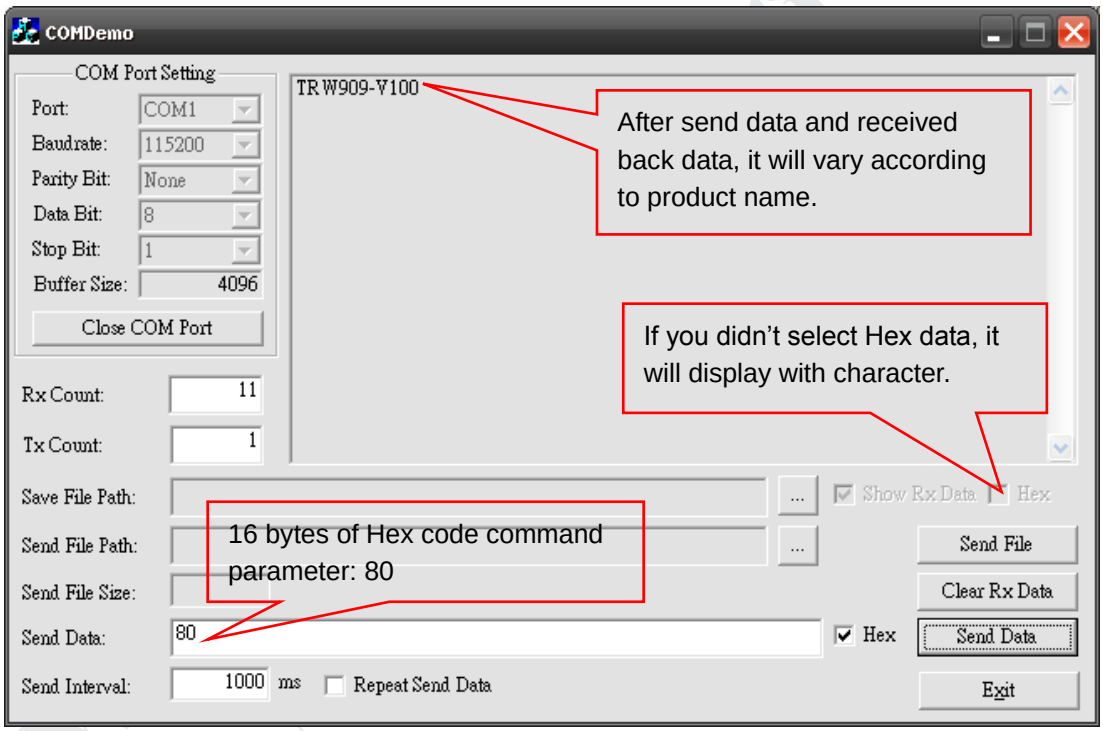
Exit setting mode

During setting mode, if the data which received is not 0x8X or sleep time over 23 seconds, RD232 will automatically exit setting mode and save all setting.

Product info

It will automatically reply product corresponding info after sent this command.

Address	Read/Write	Byte	Default
0x80	R	-	RD232-V106

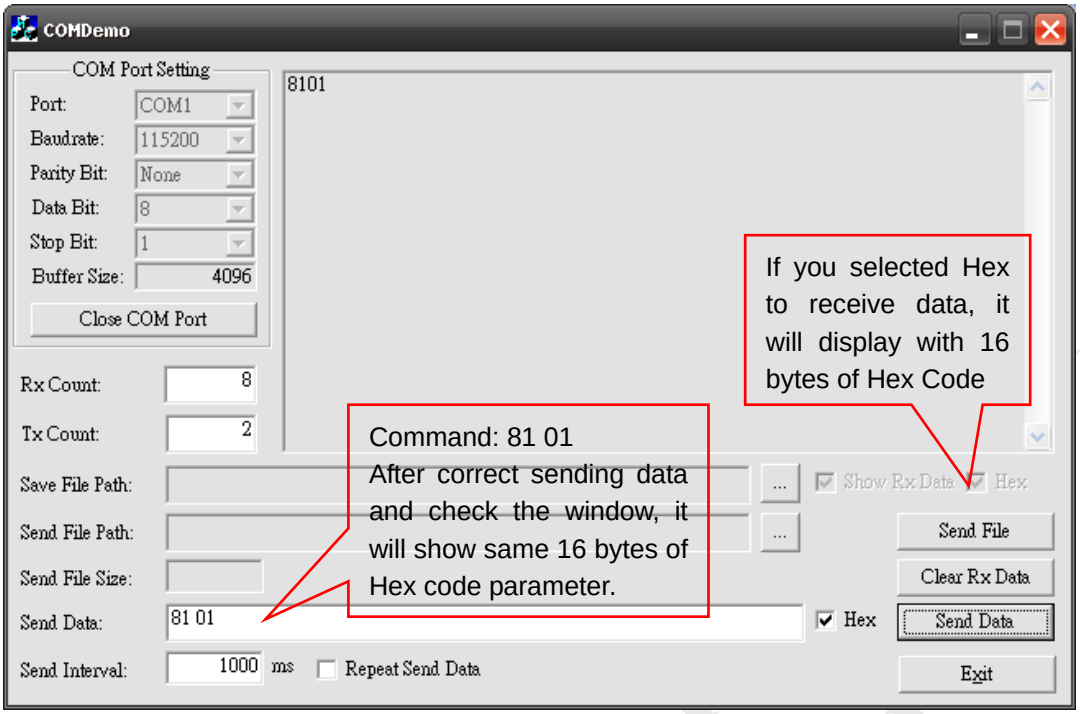


Set RF transmission rate

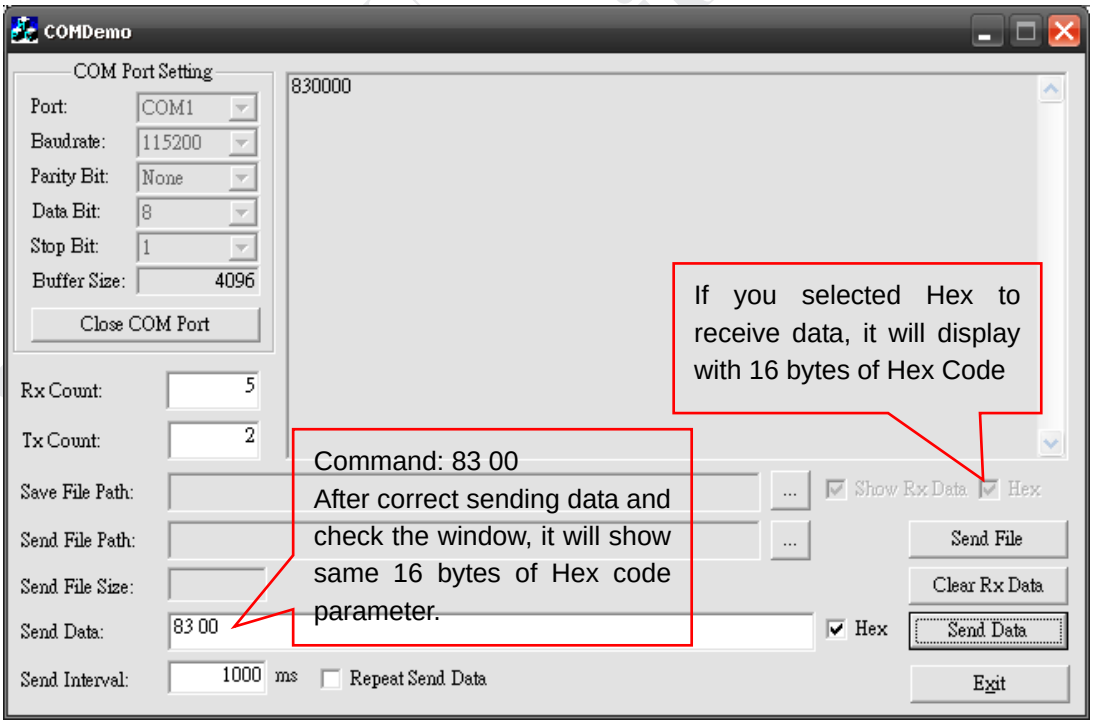
We suggest you to collocate with interface rate as setting when you set wireless transmission rate. Normal setting, RF transmission rate must be bigger than interface rate to avoid error data.

Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x81	W	1	03	00～07

Rate (bps)	1600	3200	6400	12800	25600	51200	76800	128000
Code	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07

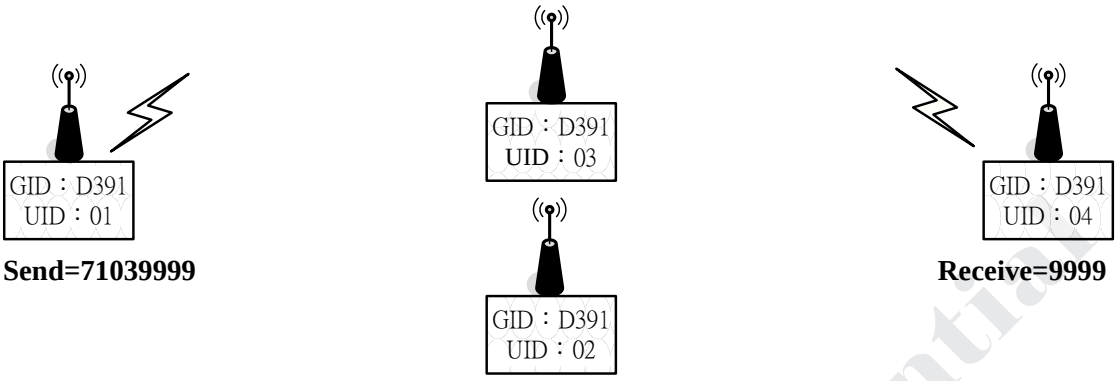


Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x83	W	1	00	00 ~ FF



Example

User just needs to send data from equipment which UID=01 to equipment which UID=04, it will receive data when UID=04.



Set RD232 (RS232 Output/485 Output/TTL Output) interface rate

1200bpbs~115200bps; user can amend RD232 (RS232 Output/485 Output/TTL Output) interface rate according to different application, default value is 115200bps.

Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x85	W	1	07	00 ~ 07

Rate (bps)	1200	2400	4800	9600	19200	38400	57600	115200
Code	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07

Set link mode

RD232(RS232 Output/485 Output/TTL Output) can collocate with RD-800HI and 3C message receive device. User can amend the link mode through command according to the product which you allocate with.

Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x86	W	1	01	00 ~ 02

Value	3C Message Receive Device	RD232(RS232 Output/485 Output/TTL Output)	RD-800HI
RD232 (RS232 Output/485 Output/TTL Output)	00	01	02

Set group ID

GID is for working group identification. When GID is different, both equipments can’ t send or receive data each other.

Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x87	W	2	0000	0000 ~ FFFF

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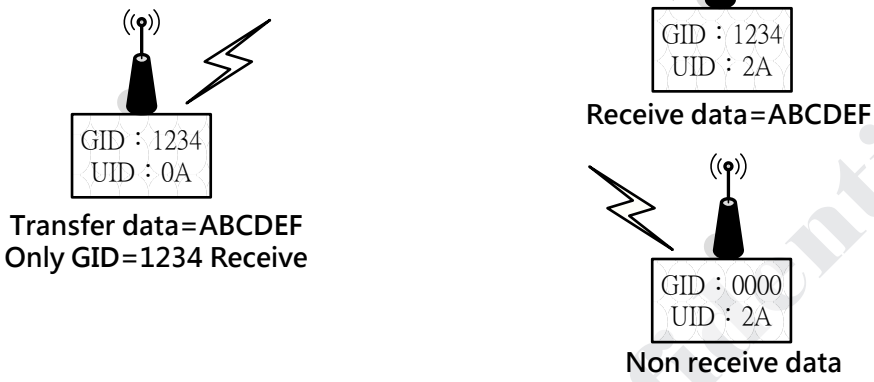
Example

When GID=1234 and transmitted side which UID=0A send data to receive side which UID=2A, GID=0000. But equipment which UID=2A can't receive any data, only GID=1234 can receive data from receive side which UID=2A.



Preset transfer station

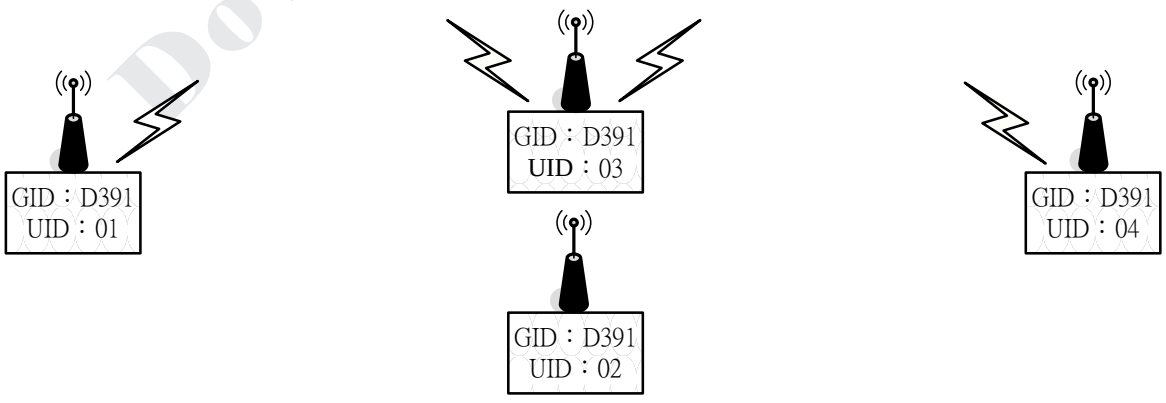
This function needs to preset constant path of data transmission mode. After finish preset, every data doesn't need to add any command and path, but the data which you send every time must be less than 120 bytes. Equipment will automatically transfer and send data according to preset path. Maximum transfer stations you can set are 10. Setting way is to add UID number on finial receiver side behind the command. If you need to go through transfer station, you need to insert UID number of path in the middle.

Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x8C	W	1 ~ 11	-	00 ~ FF

Example

There are various path setting ways when user need to sent data from equipment which UID=01 to equipment which UID=04.

✧ Method 1: command is 0x8C0304 when UID=01→UID=03→UID=04.



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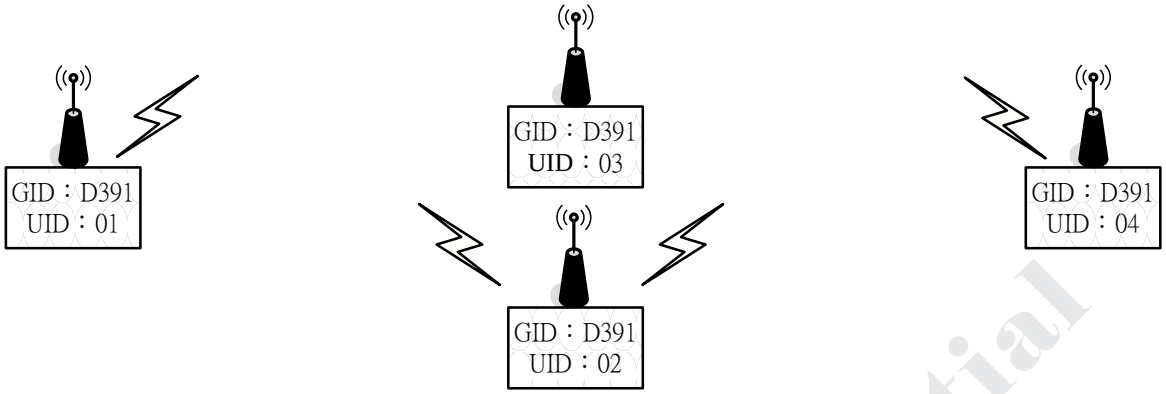
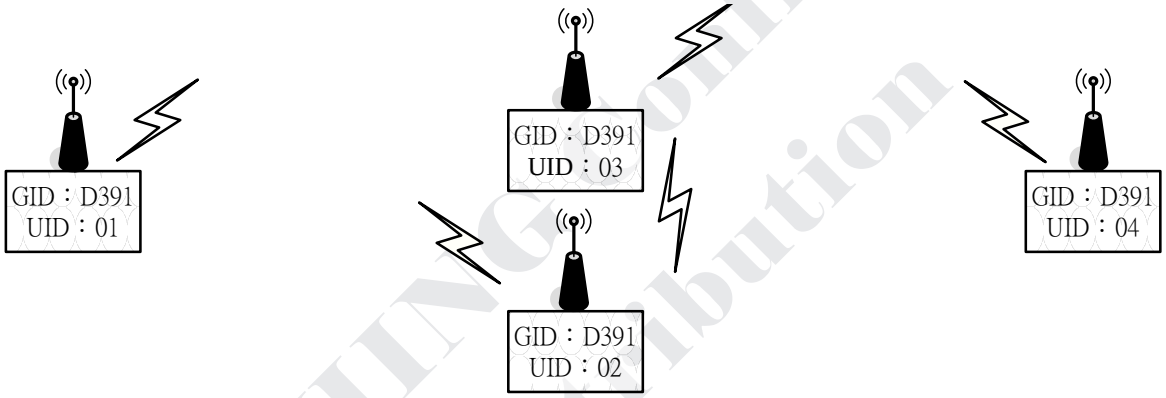
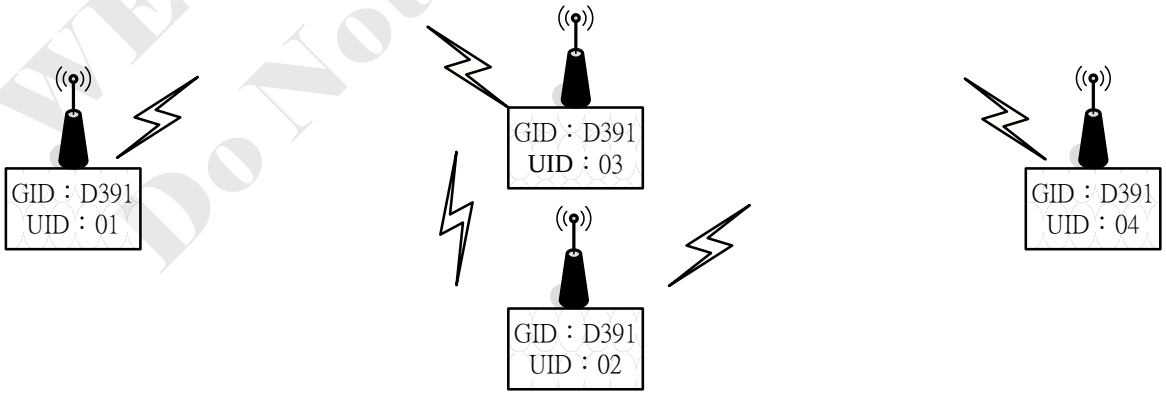
Or , command is 0x8C0304 when UID=01→UID=02→UID=04.



✧ Method 2: command is 0x8C020304 when UID=01→UID=02→UID=03→UID=04.



✧ Or , command is 0x8C020304 when UID=01→UID=03→UID=02→UID=04.



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❶ Cancel transfer station

If you need to cancel transfer station, input 0x8C.
When equipment side return 0x8C, it is meaning this transfer station already clear whole setting. Once you cancel transfer station, you must collocate with point-to-point transmission format just can start to work.

Address	Read/Write	Byte	Default(Hex)	Range(Hex)
0x8C	W	1	-	8C

Special Purpose

Collocate with our Hi Power Wireless Hopping Controller 16 Loop (RD-800HI), it can control, monitor all I/O actions, also can modifications every setting within the RD-800HI the set.
RD-800HI communicated with RD232(RS232 Output/485 Output/TTL Output): RD(TTL Output) GID=0000、RF rate =12.8Kbps

Command Summary

Address	UID	Power	GID	Transfer Station	ID Byte
0x71EF	00~FF	00～14	0000~FFFF	71～7B	1～11
Location	ID	Power consumption	Group	0x71=1 send 1 Receive； 0x72=1 send 1 transfer 1 receive； 0x73=1 send 2 transfer 1 receive	Path order

❶ Setting example

Dial switch from RD-800HI back to adjust to Command Mode, open the power and press setting key until Link light flashes and then open.
Through RD232(RS232 Output/485 Output/TTL Output) to send 0x71EF0109D39171A, set UID=01 through RD-800HI which power consumption=22dBm, GID=D391, equipment ID from return information=AA

❶ Operation Description

Through the PLC or computer to control and monitory every I/O action of Wireless Hooping Controller 16 Loop(RD-800HI). Input is RD-800HI input side, output is RD-800HI output side. You can repeat to type 2 of bytes to avoid the occurrence of malfunction when you control input and output. (After RD-800HI received control signal, it will keep around 90 seconds, and then back to no input status. If you want to constant RD-800HI output, suggest you to send one commend every 60 seconds to keep output.)

Address	ID Byte		Output State	End Code
0x71～7B	1～11	FF	00~FF	00
0x71=1 receive 1 send； 0x72=1 send 1 transfer 1 receive； 0x73=1send 2 transfer 1 receive	Path order	Type same of 2 Bytes	Type same of 2 Bytes	

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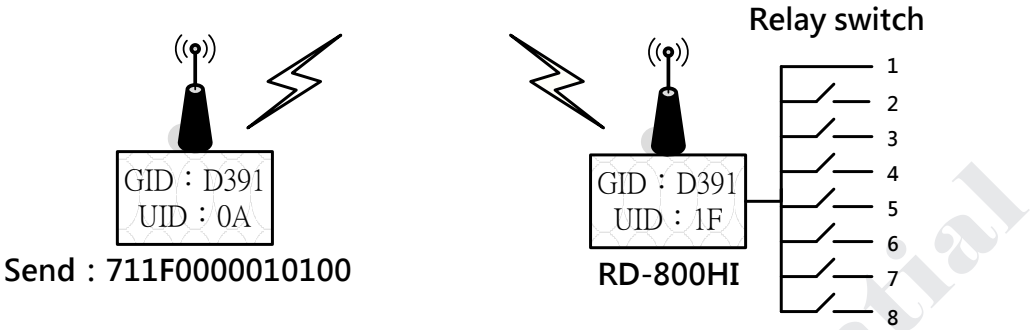
Sample 1

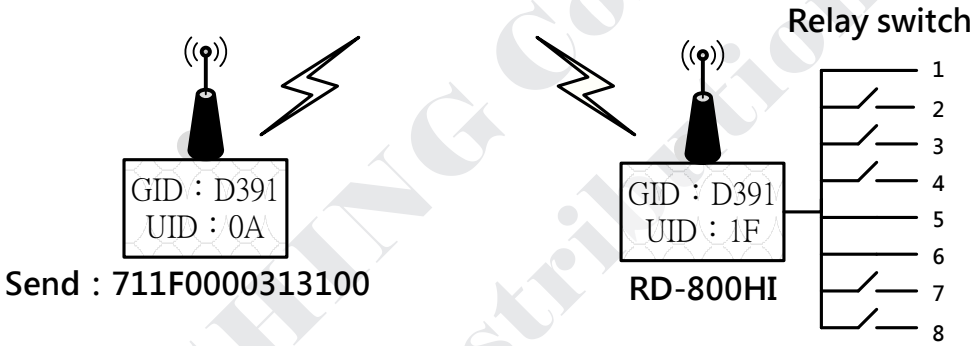
If equipment UID=0A needs to control 1st Relay action of RD-800HI which is UID=1F, sending code is 711F0000010100.



Sample 2

If equipment UID=0A needs to control 1st, 5th and 6th Relay action of RD-800HI which is UID=1F, sending code is 711F0000313100.

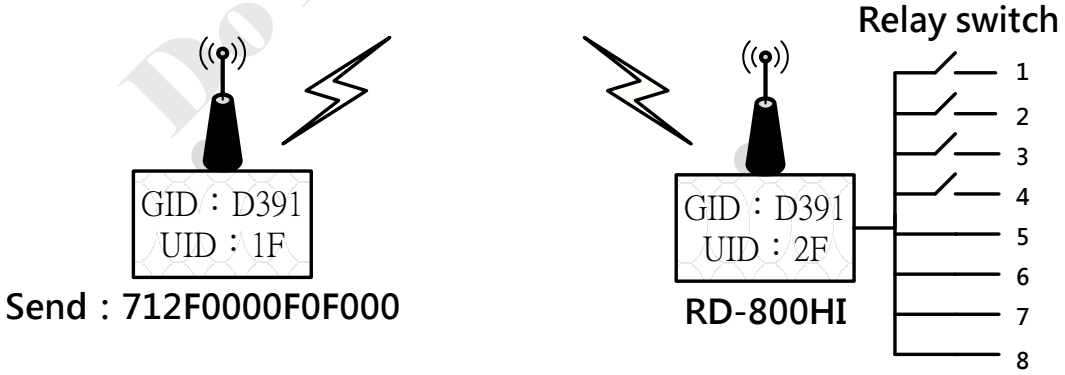
If you need 1st, 5th and 6th Relay keep action of RD-800HI, no close, please send 711F0000313100 every 30~60 seconds.



Sample 3

If equipment UID=1F needs to control 5th ~8th Relay action of RD-800HI which is UID=2F, sending code is 712F0000F0F000.

If you need 5th ~8th Relay keep action of RD-800HI, no close, please send 712F0000F0F000 every 30~60 seconds.



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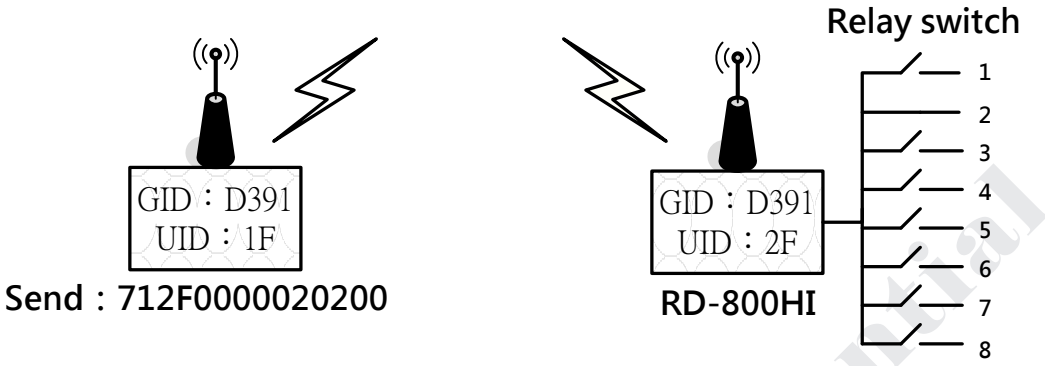
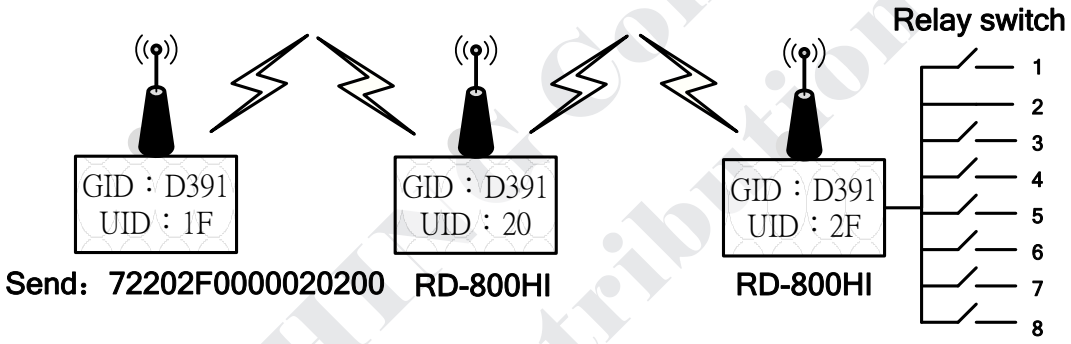
Sample 4

If equipment UID=1F needs to control 2nd Relay action of RD-800HI which is UID=2F, sending code is 712F0000020200



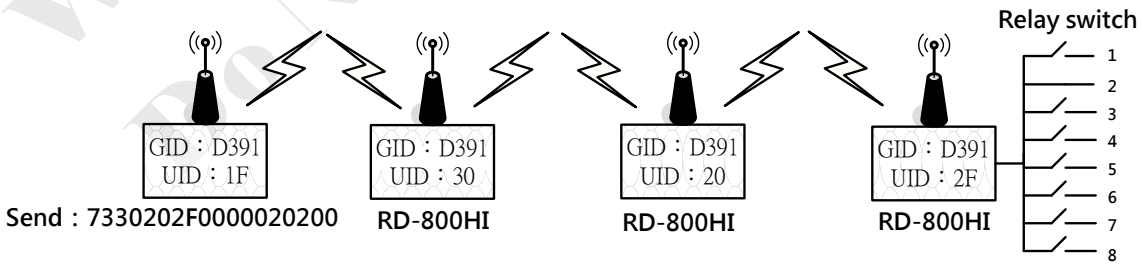
Samples 5

If equipment UID=1F needs to go through RD-800HI which is UID=20 as transfer station to transfer send data to RD-800HI which is UID=2F and control 2nd Relay action, sending code is 72202F0000020200



Example 6

If equipment UID=1F needs to go through RD-800HI which is UID=30 as transfer station to transfer send data to RD-800HI which is UID=20 and transfer send the data to RD-800HI which is UID=2F again, also control 2nd Relay action, sending code is 72202F0000020200



Firmware update

User can update firmware of this product, please download UART_Bootlader program and newest firmware from website. (Wenshing RD-232 Page)
Please check details as below:

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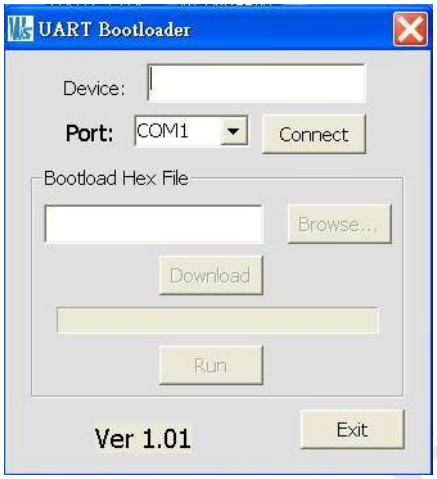
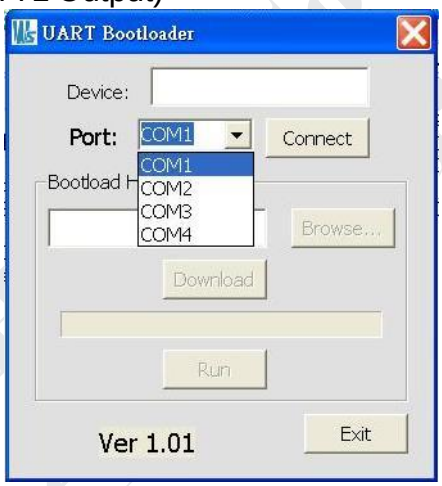
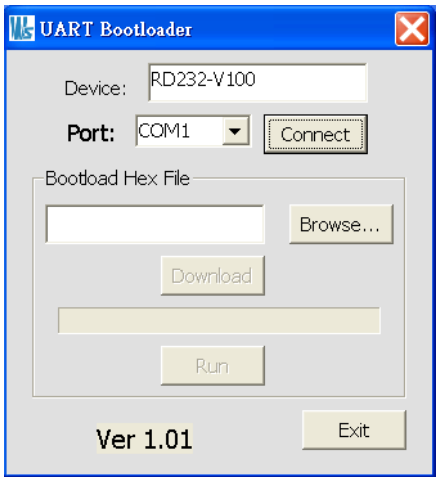
1. Before you update, please set interface rate from RD232(RS232 Output/485 Output/TTL Output) to 115200bps, please check further details from Command Description.
2. Open UART_Bootlader program which WENSHING provided.



3. Open Port list and select COM Port which link with RD232(RS232 Output/485 Output/TTL Output)



4. Click Connect to go into update mode, meanwhile, RD232(RS232 Output/485 Output/TTL Output) lights will be keep flashes, device will display device name and firmware version.



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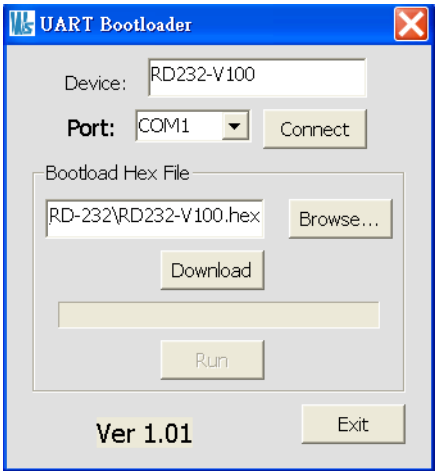
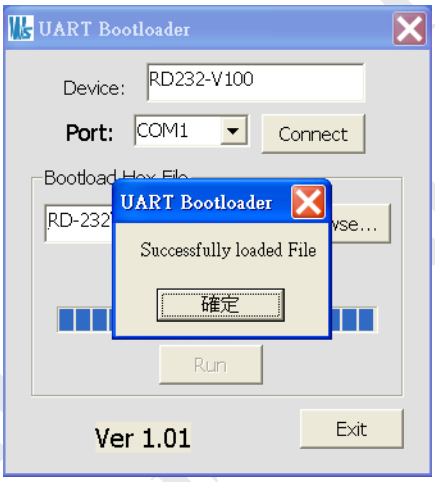
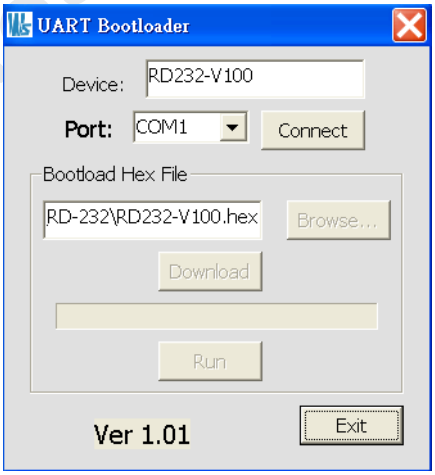
5. Click Browse to select the newest firmware version.



6. Click Download to start firmware update, it will show successfully loader File window once you finished update and press Sure.



7. Click Run to close update mode and press Exit to close UART_Bootlader program.



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CE Caution Note (European Union)

Symbol of CE it accords with EMC regulation (89/336 / EEC) to represent this device, and the low-voltage regulation of European Union (73/23/EEC). It represents to follow the following standard regulations of European Union (The bracket is a reciprocal international standard reciprocal international standard and regulation).

- EN 60950/A11: 1997/(IEC 60950/A4: 1996),The ones that includes information science and technology of apparatus of e-commerce safe.
- EN 55024: 1998 (IEC 1000-4-2, 1000-4-3, 1000-4-4, 1000-4-5, 1000-4-6, 1000-4-8, 1000-4-11) -' scientific and technological apparatus of information - The characteristic of interfere avoided - Restrain and test method '
- Chapter 2 -Static release (ESD) Demand
- Chapter 3 -Radiate the static field demand
- Chapter 4 -The electron is transmitted / produced and washed (EFT) fast Demand.
- Chapter 5 -surge demand
- Chapter 6 -Resistance demand caused in field of wireless frequency.
- Chapter 8 -Magnetic field demand of electric frequency.
- Chapter 11 –Shortly cut off the demand of making a variation with the voltage transiently under the voltage.

EN 55022:1998/(CISPR 22:1997) ,Class B, ' “To assess information scientific and technological apparatus wireless restriction and way of interfering with the characteristic.”

FCC Consistent Declaration (U.S.A. Only)

Attention: FCC rule regulation, modified and changed must allowed by WENSHING Electronics company, otherwise that would make you operate this apparatus invalid. This apparatus adopted test, according to chapter 15 that FCC regulation, accord with Class B digital restrictions of device. These limits are designed to provide reasonable protection, avoid to having harmful interference at home’s environment.

This device may have radiated wireless frequency energy. If don’t allow the instruction manual, then may will interfere wireless communication. However, there is no any way to guarantee, it will not be interfered in particular installed. If this device really causes harmful interference, (It could be confirmed by turning on or off this device.) Advise you to try to use the following ways modifying the interference situation.

- Relocation receiving antenna or altering its direction.
- Increase the distance between device and receiver.
- Please connect this device to the outlet in the circuit different from the receiver.
- The following manuals is published by Federal Communications Commission, they must be helpful to all users.
- How to Identify and Resolve Radio-TV Interference Problems. (This manual can be obtained by relevant departments of publication of the U.S. government.)
- Government Printing Office, Washington D.C., 20402. Stock No. 004-00398-5

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